Claims

1. A composition useful for the prophylaxis and/or treatment of an individual afflicted with a Hepatitis C virus (HCV) infection and/or at least one disease associated with a HCV infection, said composition comprising at least one agent selected from the group consisting of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, salts of all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, salts of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN).

2. The composition according to claim 1, wherein the composition comprises from 0.01 to 0.15 % by weight of the agent(s).

3. The composition according to claim 1 or 2, wherein the composition comprises from 0.02 to 0.05 % by weight of the agent(s).

4. The composition according to one of the preceding claims, wherein the selenium salt is sodium selenite.

5. The composition according to one of the preceding claims, wherein the composition further comprises at least one of the following compounds, pegylated α-, β-, and/or γ-interferon, non-pegylated (standard) α-, β-, and/or γ-interferon, and ribavirin.

6. The composition according to one of the preceding claims, wherein the composition further comprises paraquat.

7. The composition according to one of the preceding claims, further comprising at least one pharmaceutically acceptable carrier, excipient and/or diluent.

8. The composition according to one of the preceding claims, wherein the individual afflicted with a HCV infection and/or at least one disease associated with HCV infection is a non-responder to interferon and/or ribavirin therapy.

9. Use of at least one of the agents selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, salts of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN) for the preparation of a pharmaceutical composition for the treatment and/or prophylaxis of a Hepatitis C virus infection and/or a disease associated with HCV infection.

10. Use according to claim 9, wherein the composition comprises from 0.01 to 0.15 % by weight of the agent(s).

11. Use according to claim 9 or 10, wherein the composition comprises from 0.02 to 0.05 % by weight of the agent(s).

12. Use according to one of claims 9 to 11, wherein the selenium salt is sodium selenite.

13. Use according to one of claims 9 to 12, wherein the composition further comprises at least one of the following compounds, pegylated α-, β-, and/or γ-interferon, non-pegylated (standard) α-, β-, and/or γ-interferon, and ribavirin..

14. Use according to one of claims 9 to 13, wherein the composition further comprises paraquat.

15. Use according to one of claims 9 to 14, wherein said composition is for oral application.

16. Use according to one of claims 9 to 14, wherein said composition is for topical application.

17. Use according claim 15, wherein an oral dosage unit of said composition contains from 1 to 300 mg, preferably 1 to 150 mg, more preferably from 1 to 100 mg, and particularly from 1 to 50 mg of the agent(s).

18. Use according to one of claims 9 to 17, wherein the pharmaceutical composition is for the treatment and/or prophylaxis of an individual having a HCV infection and/or a disease associated with HCV infection, whereby the individual is a non-responder to interferon and/or ribavirin therapy.

19. A composition in unit dosage form for oral administration, comprising as an active ingredient at least one agent selected from the group consisting of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, salts of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl

esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR) and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN), and a pharmaceutically acceptable carrier suitable for oral administration, said agent(s) being present in said unit dosage form in an amount of from about 1 to 50 mg wherein said unit dosage form is a tablet or capsule.

20. The composition of claim 19, further comprising paraquat.

21. A method for preventing and/or treating Hepatitis C virus infection and/or diseases associated with HCV infection in an individual, the method comprising the step of administering a pharmaceutically effective amount of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, salts of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN) to the individual.

22. The method according to claim 21, wherein the individual is a non-responder to interferon and/or ribavirin therapy.

23. A method for preventing and/or treating Hepatitis C virus infection and/or diseases associated with HCV infection in cells or cell cultures, the method comprising the step of administering a pharmaceutically effective amount of

selenium, selenium salts, Vitamin D_3, all tans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, salts of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN) to the individual.

24. A method for regulating the production of Hepatitis C virus in an individual, the method comprising the step of administering an individual a pharmaceutically effective amount of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, salts of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN) to the individual.

25. The method according to claim 24, wherein the individual is a non-responder to interferon and/or ribavirin therapy.

26. A method for regulating the production of Hepatitis C virus in cells or cell culture comprising the step of administering a pharmaceutically effective amount of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl

esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN) to the cells or cell culture.

27. The method according to one of claims 21 to 26, further comprising administering paraquat.

28. Use of at least one of the agents selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, salts of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN) for the preparation of a unit dosage form of a pharmaceutical composition for the treatment and/or prophylaxis of a hepatitis C virus infection and/or a disease associated with HCV infection, the pharmaceutical composition further comprising a pharmaceutically acceptable carrier.

29. Use according to claim 28, wherein the composition further comprises at least one of the compounds all trans retinoic acid, pegylated α-, β-, and/or γ-interferon, non-pegylated (standard) α-, β-, and/or γ-interferon, and ribavirin.

30. Use according to claim 28 or 29, wherein the selenium salt is sodium selenite.

31. Use according to one of claims 28 to 30, wherein the composition further comprises paraquat.

32. Use according to one of claims 28 to 31, wherein said composition is for oral application.

33. Use according to claim 32, wherein the unit dosage form for oral application is a tablet or capsule.

34. Use according to claim 33, wherein the tablet or capsule comprises between 1 and 300 mg, preferably between 1 to 150 mg, more preferably between 1 to 100 mg, and particularly between1 and 50 mg of the agent.

35. Use according to one of claims 28 to 31, wherein said composition is for topical application.

36. A method for preventing and/or treating Hepatitis C virus infection and/or diseases associated with HCV infection in an individual comprising the step of administering a pharmaceutically effective amount of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, salts of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-

naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN) which activates at least partially the activity of the human cellular protein glutathione peroxidase-gastrointestinal or which activates or stimulates at least partially the production of said human cellular protein glutathione peroxidase-gastrointestinal.

37. The method according to claim 36, wherein the individual is a non-responder to interferon and/or ribavirin therapy.

38. A method for preventing and/or treating Hepatitis C virus infection and/or diseases associated with HCV infection in cells or cell cultures comprising the step of administering a pharmaceutically effective amount of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN) which activates at least partially the activity of the human cellular protein glutathione peroxidase-gastrointestinal or which activates or stimulates at least partially the production of said human cellular protein glutathione peroxidase-gastrointestinal.

39. A method for regulating the production of Hepatitis C virus in an individual comprising the step of administering an individual a pharmaceutically effective amount of an agent selected from the group consisting of selenium, selenium

salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN), wherein said agent activates at least partially the activity of the human cellular protein glutathione peroxidase-gastrointestinal or wherein said agent at least partially activates or stimulates the production of said human cellular protein glutathione peroxidase-gastrointestinal.

40. The method according to claim 39, wherein the individual is a non-responder to interferon and/or ribavirin therapy.

41. A method for regulating the production of Hepatitis C virus in cells or cell culture comprising the step of administering a pharmaceutically effective amount of an agent selected from the group consisting of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN), wherein said agent activates at least partially the activity of the human cellular protein glutathione peroxidase-gastrointestinal or wherein said agent at least partially

activates or stimulates the production of said human cellular protein glutathione peroxidase-gastrointestinal in the cells or cell culture.

42. A method for regulating the expression of the human cellular protein glutathione peroxidase-gastrointestinal in an individual comprising the step of administering the individual a pharmaceutically effective amount of an agent selected from the group consisting of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN), wherein said agent inhibits at least partially the transcription of DNA and/or the translation of RNA encoding said human cellular protein glutathione peroxidase-gastrointestinal.

43. The method according to claim 42, wherein the individual is a non-responder to interferon and/or ribavirin therapy.

44. A method for regulating the expression of the human cellular protein glutathione peroxidase-gastrointestinal in an individual comprising the step of administering the individual a pharmaceutically effective amount of an agent selected from the group consisting of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts

of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN), wherein said agent activates at least partially the transcription of DNA and/or the translation of RNA encoding said human cellular protein glutathione peroxidase-gastrointestinal.

45. The method according to claim 44, wherein the individual is a non-responder to interferon and/or ribavirin therapy.

46. A method for regulating the expression of the human cellular protein glutathione peroxidase-gastrointestinal in cells or cell culture comprising the step of administering the cells or cell culture a pharmaceutically effective amount of an agent selected from the group consisting of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl amide of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amide of 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN), wherein said agent activates at least partially the transcription of DNA and/or the translation of RNA encoding said human cellular protein glutathione peroxidase-gastrointestinal.

47. A method for regulating the activity of the human cellular protein glutathione peroxidase-gastrointestinal in an individual comprising the step of administering the individual a pharmaceutically effective amount of an agent

selected from the group consisting of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl amide of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amide of 9-cis retinoic acid, C_1 - C_{10} alkyl amide of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amide of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN), wherein said agent interacts with said human cellular protein glutathione peroxidase-gastrointestinal.

48. The method according to claim 47, wherein the individual is a non-responder to interferon and/or ribavirin therapy.

49. A method for regulating the activity of the human cellular protein glutathione peroxidase-gastrointestinal in cells or cell culture comprising the step of administering the cells or cell culture a pharmaceutically effective amount of an agent selected from the group consisting of selenium, selenium salts, Vitamin D_3, all trans retinoic acid, C_1 - C_{10} alkyl esters of all trans retinoic acid, salts of C_1 - C_{10} alkyl esters of all trans retinoic acid, C_1 - C_{10} alkyl amides of all trans retinoic acid, salts of C_1 - C_{10} alkyl amides of all trans retinoic acid, 9-cis retinoic acid, C_1 - C_{10} alkyl esters of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl esters of 9-cis retinoic acid, C_1 - C_{10} alkyl amides of 9-cis retinoic acid, salts of C_1 - C_{10} alkyl amides of 9-cis retinoic acid, (E)-4-[2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl-1-propenyl] benzoic acid (TTNPB), (4-[5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphtalenyl) carboxamido] benzoic acid (AM-580), N-(4-hydroxyphenyl) retinamide (4-HPR), and 6-[3-(1-adamantyl)-4-hydroxyphenyl]-2-naphthalene carboxylic acid (AHPN), wherein said agent interacts with said human cellular protein glutathione peroxidase-gastrointestinal.

50. The method according to one of claims 36 to 49, further comprising administering paraquat.